

This is Exhibit "A" referred to in
the affidavit of ALAN F. GRAVES
dated at Ottawa, Ontario, this
24th day of November, 2004.

Olcic
A Commissioner, etc.

Peterina Claire Gordon, a Commissioner, etc.,
City of Ottawa, for Smart & Biggar, Barfords
and Solicitors and Fetherstonhaugh & Co.,
Patent and Trade Mark Agents.
Expires July 21, 2007.

BEST AVAILABLE COPY

11965 RO

Invention Disclosure Submission Reply

		09 Jan 2000
Photonic Switch with power equalization across each WDM output port		

ORIGINAL
DO NOT MARKRECEIVED BY
NORTEL NETWORKS

JAN 10 2000

— Inventors —

IP LAW GROUP
OTTAWA DOCKET DEPT.

1520741	HR Name: GRAVES, ALAN F Known As: ALAN	Location: 3500 CARLING AVENUE Dept: 1A03 Phone: 3935114 Ext Phone: (613) 753-5114 Fax: (613) 763-9515 Ext Fax: (613) 763-9515 MailStop: 04355115 Citizenship: CANADA	Address: 22 APPALOOSA DRIVE KANATA, ON CANADA K2M1N7 Phone: (613) 5926176
---------	---	---	---

— Attachments —

<End of Attachments>

DAVID MANN	DAVID MANN
Advanced Technology	
BILL JUNKIN, GREG BENOIT	
20 nov 1999	
No	
No	

Photonic Switch, Photonic Cross-connect. Product designations not yet in place (will be a major technology program in 2000)

no

no

24340

In an all-optical network with Photonic Switching, the act of switching a new path changes the concatenation of optical paths making up the end-to-end link from transmitter to receiver, resulting in variations in optical levels for each of the optical carriers in each WDM exit port/ongoing fiber from the switch node. This can lead to either some low power optical carriers within a WDM group, which cannot maintain an adequate signal to impairment to allow error-free reception, or may lead to individual carriers having too high a power, resulting in impairments in other carriers, by one of several mechanisms. This disclosure shows a method of overcoming this by adding a central control system with active power level control at a switch node, permitting a per-wavelength power level adjustment to be integrated into the photonic switch, thereby allowing the optical signals to all be set at the same level. This disclosure results from recommendations from Bill Junkin in his e-mail of Nov 30/99. NOTE: OTHER INVENTORS MAY BE ADDED LATER.

This was largely covered in the section above. The problem to be solved is the impairment in the performance of an all-optical switched network, due to the build up of uncontrolled or partially controlled tolerances through the concatenated spans between switches that comprise the overall optical path from transmitter to receiver, given that the concatenation of spans into an end-to-end link cannot be predicted ahead of the decision to establish the switched path. These impairments come in several forms, such as dispersion, non-linear effects, and power level control. This disclosure deals explicitly with power level control, but some of the techniques may be extensible to at least some of the other impairments.

This is the first attempt at solving this problem in a wavelength sliced switch

This will be (and has already been partially) provided in-depth separately. The solution is based upon adding two more parallel switch planes to a (typically) 40-160 lambda wavelength plane switch, combined with two more WDD subsystems, a power measuring receiver, a control system with latching memory and a means for modulating the optical loss (or gain) across the individual wavelength plane switches. As a result, whenever a new path is being set up the output of the new signal can be monitored and adjusted until it matches the level of other optical carriers in the same WDM bundle. Substantial information has already been passed to Bill Junkin/Greg Benoit prior to Nov 30/1999, and more will be provided before the end of January.

This is a step towards a practical implementation of an all-optical switched network

**This Page is Inserted by IFW Indexing and Scanning
Operations and is not part of the Official Record**

BEST AVAILABLE IMAGES

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images include but are not limited to the items checked:

- BLACK BORDERS**
- IMAGE CUT OFF AT TOP, BOTTOM OR SIDES**
- FADED TEXT OR DRAWING**
- BLURRED OR ILLEGIBLE TEXT OR DRAWING**
- SKEWED/SLANTED IMAGES**
- COLOR OR BLACK AND WHITE PHOTOGRAPHS**
- GRAY SCALE DOCUMENTS**
- LINES OR MARKS ON ORIGINAL DOCUMENT**
- REFERENCE(S) OR EXHIBIT(S) SUBMITTED ARE POOR QUALITY**
- OTHER:** _____

IMAGES ARE BEST AVAILABLE COPY.

As rescanning these documents will not correct the image problems checked, please do not report these problems to the IFW Image Problem Mailbox.